For the reasons set out in the preamble, title 40, chapter I of the Code of Federal Regulations is amended as follows:

PART 90–CONTROL OF EMISSIONS FROM NONROAD SPARK-IGNITION ENGINES

1. The authority citation for part 90 is revised to read as follows:

Authority: 42 U.S.C. 7521, 7522, 7523, 7524, 7525, 7541, 7542, 7543, 7547, 7549, 7550, and 7601(a).

Subpart A - General

2. Section 90.1 is amended by adding a sentence to the end of paragraph (a) and by revising paragraph (b)(5)(iv) to read as follows:

§ 90.1 Applicability.

(a) * * * To the extent permitted by other parts of this Chapter, this Part may, at the engine manufacturer's option, apply to engines with gross power output greater than 19 kW that have an engine displacement of less than or equal to one liter.

(b)* * *

(5)* * *

(iv) The engine does not meet the criteria to be categorized as a Class III, IV or V engine, as indicated in §90.103, except for cases where the engine will be used only to propel a flying vehicle forward, sideways, up, down or backward through air.

* * * * *

3. Section 90.3 is amended by revising the definition of "handheld equipment engine," adding the words "handheld and" immediately preceding the word "nonhandheld" in the definition of "phase 2 engine," by adding the words "any handheld engine family or" immediately preceding the words "any nonhandheld engine family" in the definition of "small volume engine family," and by adding a sentence to the end of the definitions of "small volume engine manufacturer,"

“small volume equipment manufacturer,” and small volume equipment model” to read as follows:

§ 90.3 Definitions.

* * * * *

Handheld equipment engine means a nonroad engine that meets the requirements specified in §90.103(a)(2)(I) through (v).

* * * * *

Small volume engine manufacturer * * *. For handheld engines, the term *small volume engine manufacturer* means any engine manufacturer whose total eligible production of handheld engines are projected at the time of certification of a given model year to be no more than 25,000 handheld engines.

Small volume equipment manufacturer * * *. For handheld equipment, the term *small volume equipment manufacturer* has the same meaning except that it is limited to 25,000 pieces of handheld equipment rather than 5,000 pieces of nonhandheld equipment.

Small volume equipment model * * *. For handheld equipment, the term *small volume equipment model* has the same meaning except that it is limited to 5,000 pieces of handheld equipment, rather than 500 pieces of nonhandheld equipment.

* * * * *

Subpart B -- Emission Standards and Certification Provisions

4. Section 90.103 is amended in paragraph (a) introductory text, by revising the heading for Table 2, adding two new entries to the beginning of Table 2, and adding Table 4, is amended by adding paragraph (a)(2)(v), is amended in paragraph (a)(6) by revising the first and last sentences, and is amended in paragraph (a)(7) by revising the first and last sentences to read as follows:

§90.103 Exhaust emission standards.

(a) * * *

TABLE 2. - Phase 2 Class I-A, Class I-B, and Class I Engine Exhaust Emission Standards

(grams per kilowatt-hour)

Engine class	HC+NOx	NMHC + NOx	CO	Effective date
I-A	50	---	610	2001 Model Year
I-B	40	37	610	2001 Model Year
* *	* *	*	*	*

* * * * *

TABLE 4. - Phase 2 Handheld Exhaust Emission Standards by Model Year

(grams per kilowatt-hour)

Engine class	Emission requirement	Model year					
		2002	2003	2004	2005	2006	2007 and later
Class III	HC+NOx	238	175	113	50	50	50
	CO	805	805	805	805	805	805
Class IV	HC+NOx	196	148	99	50	50	50
	CO	805	805	805	805	805	805
Class V	HC+NOx	---	---	143	119	96	72
	CO	---	---	603	603	603	603

* * * * *

(2)* * *

(v) Where a piece of equipment otherwise meeting the requirements of paragraphs (a)(2)(iii) or (a)(2)(iv) of this section exceeds the applicable weight limit, emission standards for class III, IV or V, as applicable, may still apply if the equipment exceeds the weight limit by no more than the extent necessary to allow for the incremental weight of a four stroke engine or the incremental weight of a two stroke engine having enhanced emission control acceptable to the Administrator. Any manufacturer utilizing this provision to exceed the subject weight limitations shall maintain and make available to the Administrator upon request, documentation to substantiate that the exceedance of either weight limitation is a direct result of application of a four stroke or enhanced two stroke engine having the same, less or very similar power to two

stroke engines that could otherwise be used to power the equipment and remain within the weight limitations.

* * * * *

(6) In lieu of certifying to the applicable Phase 2 standards, small volume engine manufacturers as defined in this part may, at their option, certify their engine families as Phase 1 engines until the 2010 model year for nonhandheld engine families excluding Class I-A and Class I-B engine families, until the 2008 model year for Class III and Class IV engine families, and until the 2010 model year for Class V engine families. * * * Beginning with the 2010 model year for nonhandheld engine families, the 2008 model year for Class III and Class IV engine families, and the 2010 model year for Class V engine families, these engines must meet the applicable Phase 2 standards.

(7) In lieu of certifying to the applicable Phase 2 standards, manufacturers of small volume engine families, as defined in this part may, at their option, certify their small volume engine families as Phase 1 engines until the 2010 model year for nonhandheld engine families excluding Class I-A and Class I-B engine families, until the 2008 model year for Class III and Class IV engine families, and until the 2010 model year for Class V engine families. * * * Beginning with the 2010 model year for nonhandheld engine families, the 2008 model year for Class III and Class IV engine families, and the 2010 model year for Class V engine families, these engines must meet the applicable Phase 2 standards.

* * * * *

5. Section 90.104 is amended by revising paragraph (g)(1), by deleting the reference in Table 1 of paragraph (g)(2) to section "90.104(g)(3)" and replacing it with a reference to section "90.104(g)(4)," by redesignating paragraph (g)(3) as paragraph (g)(4), by adding new paragraph (g)(3), by revising the newly designated paragraph (g)(4), and by revising the introductory text of paragraph (h)(2) to read as follows:

§ 90.104 Compliance with emission standards.

* * * * *

(g)(1) Small volume engine manufacturers and small volume engine families may, at their option, take deterioration factors for HC+NOx (NMHC+NOx) and CO from Table 1 or Table 2 of this section, or they may calculate deterioration factors for HC+NOx (NMHC+NOx) and CO according to the process described in paragraph (h) of this section. For technologies that are not addressed in Table 1 or Table 2 of this section, the manufacturer may ask the Administrator to assign a deterioration factor prior to the time of certification. The provisions of this paragraph do not apply to Class I-A and Class I-B engines.

* * * * *

(3) Table 2 follows:

Table 2. - Handheld Engine HC+NOx and CO Assigned Deterioration Factors

for Small Volume Manufacturers and Small Volume Engine Families

Engine class	Two-stroke engines[(1)]		Four-stroke engines		Engines with aftertreatment
	HC+NOx	CO	HC+NOx	CO	
Class III	1.1	1.1	1.5	1.1	Dfs must be calculated using the formula in § 90.104(g)(4)
Class IV	1.1	1.1	1.5	1.1	
Class V	1.1	1.1	1.5	1.1	

1 Two-stroke technologies to which these assigned deterioration factors apply include conventional two-strokes, compression wave designs, and stratified scavenging designs.

(4) Formula for calculating deterioration factors for engines with aftertreatment:

DF = [(NE * EDF) - (CC * F)]/ (NE - CC)

where:

DF = deterioration factor

NE = new engine emission levels prior to the catalyst (g/kW-hr)

EDF = deterioration factor for engines without catalyst as shown in Table 1 or Table 2

CC = amount converted at 0 hours in g/kW-hr

F = 0.8 for HC (NMHC), 0.0 for NOx, and 0.8 for CO for all classes of engines

(h) * * *

(2) For engines not using assigned dfs from Table 1 or Table 2 of paragraph (g) of this section, dfs shall be determined as follows:

* * * * *

6. Section 90.105 is amended by adding a sentence to the end of paragraph (a)(1), by adding two entries to the beginning of Table 1 of paragraph (a)(2), and adding new paragraphs (a)(3) and (a)(4) to read as follows:

§ 90.105 Useful life periods for Phase 2 engines.

(a) * * *

(1) * * * Engines with gross power output greater than 19 kW that have an engine displacement less than or equal to one liter that optionally certify under this part as allowed in §90.1(a), must certify to a useful life period of 1,000 hours.

(2) Table 1 follows:

Table 1. - Useful Life Categories for Nonhandheld Engines (hours)

Class I-A	50	125	300
Class I-B	125	250	500
* *	* *	* *	*

(3) For handheld engines: Manufacturers shall select a useful life category from Table 2 of this paragraph (a) at the time of certification.

(4) Table 2 follows:

Table 2: Useful Life Categories for Handheld Engines (hours)

Class III	50	125	300
Class IV	50	125	300
Class V	50	125	300

* * * * *

7. Section 90.107 is amended by removing the word “and” at the end of paragraph (d)(6)(iv), adding the word “and” at the end of paragraph (d)(6)(v), and adding a new paragraph (d)(6)(vi) to read as follows:

§ 90.107 Application for certification.

* * * * *

(d) * * *

(6) * * *

(vi) Information relating to altitude kits to be certified, including: a description of the altitude kit; appropriate part numbers; the altitude ranges at which the kits must be installed on or removed from the engine for proper emissions and engine performance; statements to be included in the owner’s manual for the engine/equipment combination (and other maintenance related literature) that (A) declare the altitude ranges at which the kit must be installed or removed, and (B) state that the operation of the engine/equipment at an altitude that differs from that at which it was certified, for extended periods of time, may increase emissions; and a statement that an engine with the altitude kit installed will meet each emission standard

throughout its useful life (the rationale for this assessment must be documented and retained by the manufacturer, and provided to the Administrator upon request);

* * * * *

8. Section 90.114 is amended by revising paragraph (f)(1), by adding a new paragraph (f)(2), and by revising paragraph (f)(3) to read as follows:

§ 90.114 Requirement of certification--engine information label.

* * * * *

(f) * * *

(1) For nonhandheld engines: The Emissions Compliance Period referred to on the Emissions Compliance label indicates the number of operating hours for which the engine has been shown to meet Federal emission requirements. For engines less than 66 cc, Category C = 50 hours, B = 125 hours, and A = 300 hours. For engines equal to or greater than 66 cc but less than 225 cc displacement, Category C = 125 hours, B = 250 hours, and A = 500 hours. For engines of 225 cc or more, Category C = 250 hours, B = 500 hours, and A = 1000 hours.

(2) For handheld engines: The Emissions Compliance Period referred to on the Emissions Compliance label indicates the number of operating hours for which the engine has been shown to meet Federal emission requirements. Category C = 50 hours, B = 125 hours, and A = 300 hours.

(3) The manufacturer must provide, in the same document as the statement in paragraph

(f)(1) or (f)(2) of this section, a statement of the engine's displacement or an explanation of how to readily determine the engine's displacement. The Administrator may approve alternate language to the statement in paragraph (f)(1) or (f)(2) of this section, provided that the alternate language provides the ultimate purchaser with a clear description of the number of hours represented by each of the three letter categories for the subject engine's displacement.

9. Section 90.116 is amended by redesignating paragraphs (b)(1) through (b)(5) as paragraphs (b)(3) through (b)(7), respectively, and by adding new paragraphs (b)(1) and (b)(2), and revising newly designated paragraph (b)(3) to read as follows:

§ 90.116 Certification procedure--determining engine displacement, engine class, and engine families.

* * * * *

(b)* * *

(1) Class I-A--nonhandheld equipment engines less than 66 cc in displacement,

(2) Class I-B--nonhandheld equipment engines greater than or equal to 66 cc but less than 100 cc in displacement,

(3) Class I–nonhandheld equipment engines greater than or equal to 100 cc but less than 225 cc in displacement,

(4) Class II–nonhandheld equipment engines greater than or equal to 225 cc in displacement,

* * * * *

10. Section 90.119 is amended by revising paragraphs (a)(1)(I) and (a)(1)(ii) to read as follows:

§ 90.119 Certification procedure--testing.

(a) * * *

(1) * * *

(I) Class I, I-B, and II engines must use Test Cycle A described in Subpart E of this part, except that Class I, I-B, and II engine families in which 100 percent of the engines sold operate only at rated speed may use Test Cycle B described in Subpart E of this part.

(ii) Class I-A, III, IV, and V engines must use Test Cycle C described in Subpart E of this part.

* * * * *

Subpart C - Certification Averaging, Banking, and Trading Provisions

11. Section 90.203 is amended by revising paragraphs (e)(1), (e)(3), (e)(5), paragraph (f), paragraph (g)(1), and the second sentence of paragraph (h) to read as follows:

§ 90.203 General provisions.

* * * * *

(e) (1) A manufacturer may certify engine families at Family Emission Limits (FELs) above or below the applicable emission standard subject to the limitation in paragraph (f) of this section, provided the summation of the manufacturer's projected balance of credits from all credit transactions for all engine classes in a given model year is greater than or equal to zero, as determined under § 90.207 or § 90.216, as applicable.

* * *

(3) A nonhandheld engine family with an FEL below the applicable emission standard may generate positive emission credits for averaging, banking, or trading, or a combination thereof. A handheld engine family with an FEL below the applicable emission standard may generate positive emission credits for averaging or trading. A handheld engine family meeting the requirements of §90.205(a)(4) or (5), whichever is applicable, may generate positive emission credits for banking.

* * *

(5) In the case of a production line testing (PLT) failure pursuant to subpart H of this part,

a manufacturer may revise the FEL based upon production line testing results obtained under subpart H of this part and upon Administrator approval pursuant to § 90.122(d). The manufacturer may use credits to cover both past production and subsequent production of the engines as needed as allowed under § 90.207(c) or §90.216(c), as applicable.

(f) No Phase 2 engine family may have a HC + NOx FEL that is greater than 32.2 g/kW-hr for Class I engines, 94 g/kW-hr for Class I-A engines, 50 g/kW-hr for Class I-B engines, 26.8 g/kW-hr for Class II engines, 336 g/kW-hr for Class III engines, 275 g/kW-hr for Class IV engines, or 186 g/kW-hr for Class V engines.

(g)(1) Credits generated in a given model year by an engine family subject to the Phase 2 emission requirements may only be used in averaging, banking or trading, as appropriate, for any other engine family for which the Phase 2 requirements are applicable. Credits generated in one model year may not be used for prior model years, except as allowed under §90.207(c) or §90.216(c), as applicable.

* * *

(h) * * * Except as provided in §90.207(c) or §90.216(c), as applicable, an engine family generating negative credits for which the manufacturer does not obtain or generate an adequate number of positive credits by that date from the same or previous model year engines will violate the conditions of the certificate of conformity.

* * * * *

12. Section 90.204 is amended by removing the word “nonhandheld” in paragraph (b) and revising paragraph (c) to read as follows:

§ 90.204 Averaging

* * * * *

(c) Credits used in averaging for a given model year may be obtained from credits generated in the same model year by another engine family, credits banked in previous model years, or credits of the same or previous model year obtained through trading subject to the provisions of §90.205(a). The restrictions of this paragraph notwithstanding, credits from a given model year may be used to address credit needs of previous model year engines as allowed under §90.207(c).

* * * * *

13. Section 90.205 is amended by adding new paragraphs (a)(2), (a)(4), (a)(5) and (b)(3), (b)(4), and (b)(5) to read as follows:

§ 90.205 Banking.

(a) * * *

(2) Beginning with the 2000 model year, a manufacturer of a Class I-A or Class I-B engine family with an FEL below the applicable emission standard for a given model year may bank credits in that model year for use in averaging and trading.

* * * * *

(4) For the 2002 through 2004 model years, a manufacturer of a Class III or Class IV

engine family may bank credits for use in future model year averaging and trading from only those Class III or Class IV engine families with an FEL at or below 72 g/kW-hr. Beginning with the 2005 model year, a manufacturer of a Class III or Class IV engine family with an FEL below the applicable emission standard may generate credits for use in future model year averaging and trading.

(5) For the 2004 through 2006 model years, a manufacturer of a Class V engine family may bank credits for use in future model year averaging and trading from only those Class V engine families with an FEL at or below 87 g/kW-hr. Beginning with the 2007 model year, a manufacturer of a Class V engine family with an FEL below the applicable emission standard may generate credits for use in future model year averaging and trading.

* * * * *

(b) * * *

(3) Beginning with the 2000 model year and prior to the applicable date listed in paragraph (a) of this section for Class III engines, a manufacturer may bank early credits for all Class III engines with HC+NOx FELs below 72 g/kW-hr. All early credits for Class III engines shall be calculated against a HC+NOx level of 238 g/kW-hr.

(4) Beginning with the 2000 model year and prior to the applicable date listed in paragraph (a) of this section for Class IV engines, a manufacturer may bank early credits for all Class IV engines with HC+NOx FELs below 72 g/kW-hr. All early credits for Class IV engines shall be calculated against a HC+NOx level of 196 g/kW-hr.

(5) Beginning with the 2000 model year and prior to the applicable date listed in

paragraph (a) of this section for Class V engines, a manufacturer may bank early credits for all Class V engines with HC+NOx FELs below 87 g/kW-hr. All early credits for Class V engines shall be calculated against a HC+NOx level of 143 g/kW-hr.

* * * * *

14. Section 90.206 is amended by revising paragraph (c) to read as follows:

§ 90.206 Trading

* * * * *

(c) Traded credits can be used for averaging, banking, or further trading transactions, subject to the provisions of §90.205(a).

* * * * *

15. Section 90.207 is amended in paragraph (a) by revising the first sentence in the definition of "load factor" following the equation to read as follows:

§ 90.207 Credit calculation and manufacturer compliance with emission standards.

(a) * * *

Load Factor = 47 percent (i.e., 0.47) for Test Cycle A and Test Cycle B, and 85 percent (i.e., 0.85) for Test Cycle C. * * *

* * * * *

16. New sections 90.212 is added to read as follows:

§ 90.212 Optional Transition Year Averaging, Banking, and Trading Program for Phase 2 Handheld Engines.

(a) In lieu of the averaging, banking, and trading program described in §§90.204 through 90.211, a handheld engine manufacturer may, through model year 2010, participate in an optional transition year averaging, banking and trading program as described below in §§90.213 through 90.220.

(b) Under this optional transition year program, if an engine family has an FEL below the applicable standard for that year, it can generate emission credits as calculated in §90.216. These credits will be determined by subtracting the engine family's FEL from the standard and multiplying by the appropriate adjustment factor selected from Tables 1 through 3 in §90.216. These credits will be designated as "Optional Transition Year" credits. These credits, as adjusted by these factors, may be used in subsequent model years through model year 2007 to demonstrate manufacturer compliance with the applicable standard. Beginning in model year 2008 and continuing through model year 2010, these optional transition credits can be used to demonstrate compliance if, prior to the use of any credits, the manufacturer's average emission level as calculated using the FELs set by the manufacturer is equal to or lower than the manufacturer's average emission level using the manufacturer's actual production, but substituting values of 72

g/kW-hr for Class III and IV engines, and 87 g/kW-hr for Class V engines. Manufacturer will choose to participate in this optional transition year program each year and for each engine family. Manufacturers will notify EPA of their program choice at the time they request certification. Once a family has been designated as generating credits under either the optional program or the program described in §§90.204 through 90.211, the manufacturer may not change that program selection for any of the engines of that engine family produced under that model year certification approval.

§90.213 Averaging Under the Optional Program.

(a) Negative credits from engine families with FELs above the applicable emission standard must be offset by positive credits from engine families having FELs below the applicable emission standard, as allowed under the provisions of this subpart. Averaging of credits in this manner is used to determine compliance under §90.216(b).

(b) Cross-class averaging of credits is allowed across all classes of nonroad spark-ignition handheld engines at or below 19 kW participating in the optional transition year program.

(c) Credits used in averaging for a given model year may be obtained from credits generated in the same model year by another engine family, credits banked in previous model years, or credits of the same or previous model year obtained through trading. The restrictions of this paragraph notwithstanding, credits from a given model year may be used to address credit needs of previous model year engines as allowed under §90.216(c).

(d) The use of credits generated under the early banking provisions of §90.214(b) is subject to regulations under this subpart.

§ 90.214 Banking Under the Optional Program.

(a)(1) [Reserved]

(2) [Reserved]

(3) [Reserved]

(4) For the 2002 through 2004 model years, a manufacturer of a Class III or Class IV engine family may bank credits for use in future model year averaging and trading from those Class III or Class IV engine families with an FEL at or below the applicable standard.

(5) For the 2004 through 2006 model years, a manufacturer of a Class V engine family may bank credits for use in future model year averaging and trading from those Class V engine families with an FEL at or below the applicable standard.

(6) Negative credits may be banked only according to the requirements under § 90.216(c).

(b)(1) [Reserved]

(2) [Reserved]

(3) Beginning with the 2000 model year and prior to the applicable date listed in paragraph (a) of this section for Class III engines, a manufacturer may bank early credits for all Class III engines with HC+NOx FELs below the applicable standard. All early credits for Class III engines shall be calculated against a HC+NOx level of 238 g/kW-hr.

(4) Beginning with the 2000 model year and prior to the applicable date listed in paragraph (a) of this section for Class IV engines, a manufacturer may bank early credits for all Class IV engines with HC+NOx FELs below the applicable standard. All early credits for Class IV engines shall be calculated against a HC+NOx level of 196 g/kW-hr.

(5) Beginning with the 2000 model year and prior to the applicable date listed in paragraph (a) of this section for Class V engines, a manufacturer may bank early credits for all Class V engines with HC+NOx FELs below the applicable standard. All early credits for Class V engines shall be calculated against a HC+NOx level of 143 g/kW-hr.

(6) Engines certified under the early banking provisions of this paragraph are subject to all of the requirements of this part applicable to Phase 2 engines.

(c) A manufacturer may bank actual credits only after the end of the model year and after EPA has reviewed the manufacturer's end-of-year reports. During the model year and before submittal of the end-of-year report, credits originally designated in the certification process for banking will be considered reserved and may be redesignated for trading or averaging in the end-of-year report and final report.

(d) Credits declared for banking from the previous model year that have not been reviewed by EPA may be used in averaging or trading transactions. However, such credits may be revoked at a later time following EPA review of the end-of-year report or any subsequent audit actions.

§ 90.215 Trading Under the Optional Program.

(a) An engine manufacturer may exchange emission credits with other engine manufacturers in trading.

(b) Credits for trading can be obtained from credits banked in previous model years or credits generated during the model year of the trading transaction.

(c) Traded credits can be used for averaging, banking, or further trading transactions.

(d) Traded credits are subject to the limitations on use for past model years, as set forth in § 90.213(c).

(e) In the event of a negative credit balance resulting from a transaction, both the buyer and the seller are liable, except in cases involving fraud. Certificates of all engine families participating in a negative trade may be voided *ab initio* pursuant to § 90.123.

§ 90.216 Credit calculation and manufacturer compliance with emission standards under the optional program.

(a) For each engine family, HC+NOx [NMHC+NOx] certification emission credits (positive or negative) are to be calculated according to the following equation and rounded to the nearest gram. Consistent units are to be used throughout the equation.

Credits = Production x (Standard - FEL) x Power x Useful life x Load Factor x Adjustment Factor

Where:

Production = eligible production as defined in this part. Annual production projections are used to project credit availability for initial certification. Eligible production volume is used in determining actual credits for end-of-year compliance determination.

Standard = the current and applicable Small SI engine HC+NOx (NMHC+NOx) emission standard in grams per kilowatt hour as determined in §90.103 or, for early credits, the applicable emission level as specified in §90.214(b).

FEL = the family emission limit for the engine family in grams per kilowatt hour.

Power = the maximum modal power of the certification test engine, in kilowatts, as calculated from the applicable federal test procedure as described in this part.

Useful Life = the useful life in hours corresponding to the useful life category for which the engine family was certified.

Load Factor = 85 percent (i.e., 0.85) for Test Cycle C. For approved alternate test procedures, the load factor must be calculated according to the following formula:

$$\sum_{i=1}^{n} (\%MTT\ mode_i) \times (\%MTS\ mode_i) \times (WF\ mode_i)$$

Where:

%MTT mode$_i$ = percent of the maximum FTP torque for mode i.

%MTS mode$_i$ = percent of the maximum FTP engine rotational speed for mode i.

WF mode$_i$ = the weighting factor for mode i.

Adjustment Factor = 1.0, except for purposes of calculating credits for banking under the optional transition year program, in which case the adjustment factor is listed in Table 1, Table 2, or Table 3, whichever is applicable, based on the model year of the engine and its certified FEL.

Table 1 - Adjustment Factors for Class III Engines			
Model Year 2002 or Earlier Engine Families with FELs:	Model Year 2003 Engine Families with FELs:	Model Year 2004 Engine Families with FELs:	Adjustment Factor
>113 g/kW-hr	>87 g/kW-hr	- -	0.25
>87 - 113 g/kW-hr	>72 - 87 g/kW-hr	>72 - 87 g/kW-hr	0.50
>72 - 87 g/kW-hr	>50 - 72 g/kW-hr	≤72 g/kW-hr	1.00
≤72 g/kW-hr	≤50 g/kW-hr	- -	1.25

Table 2 - Adjustment Factors for Class IV Engines			
Model Year 2002 or Earlier Engine Families with FELs:	Model Year 2003 Engine Families with FELs:	Model Year 2004 Engine Families with FELs:	Adjustment Factor
>99 g/kW-hr	>87 g/kW-hr	- -	0.25
>87 - 99 g/kW-hr	>72 - 87 g/kW-hr	>72 - 87 g/kW-hr	0.50
>72 - 87 g/kW-hr	>50 - 72 g/kW-hr	≤72 g/kW-hr	1.00
≤72 g/kW-hr	≤50 g/kW-hr	- -	1.25

Table 3 - Adjustment Factors for Class V Engines			
Model Year 2004 or Earlier Engine Families with FELs:	Model Year 2005 Engine Families with FELs:	Model Year 2006 Engine Families with FELs:	Adjustment Factor
>96 g/kW-hr	- -	- -	0.25
>87 - 96 g/kW-hr	>87 g/kW-hr	>72 - 87 g/kW-hr	0.50
>72 - 87 g/kW-hr	>72 - 87 g/kW-hr	≤72 g/kW-hr	1.00
≤72 g/kW-hr	≤72 g/kW-hr	- -	1.25

(b) Manufacturer compliance with the emission standards is determined on a corporate average basis at the end of each model year. A manufacturer is in compliance when the sum of positive and negative emission credits it holds is greater than or equal to zero, except that the sum of positive and negative credits may be less than zero as allowed under paragraph (c) of this section.

(c) If, as a result of production line testing as required in subpart H of this part, an engine family is determined to be in noncompliance pursuant to §90.710, the manufacturer may raise its FEL for past and future production as necessary. Further, a manufacturer may carry a negative credit balance (known also as a credit deficit) for the subject class and model year and for the next three model years. The credit deficit may be no larger than that created by the nonconforming family. If the credit deficit still exists after the model year following the model year in which the nonconformity occurred, the manufacturer must obtain and apply credits to offset the remaining credit deficit at a rate of 1.2 grams for each gram of deficit within the next

two model years. The provisions of this paragraph are subject to the limitations in paragraph (d) of this section.

(d) Regulations elsewhere in this part notwithstanding, if an engine manufacturer experiences two or more production line testing failures pursuant to the regulations in subpart H of this part in a given model year, the manufacturer may raise the FEL of previously produced engines only to the extent that such engines represent no more than 10 percent of the manufacturer's total eligible production for that model year, as determined on the date when the FEL is adjusted. For any additional engine families determined to be in noncompliance, the manufacturer must conduct offsetting projects approved in advance by the Administrator.

(e) If, as a result of production line testing under this subpart, a manufacturer desires to lower its FEL it may do so subject to § 90.708(c).

(f) Except as allowed at paragraph (c) of this section, when a manufacturer is not in compliance with the applicable emission standard by the date 270 days after the end of the model year, considering all credit calculations and transactions completed by then, the manufacturer will be in violation of these regulations and EPA may, pursuant to § 90.123, void *ab initio* the certificates of engine families for which the manufacturer has not obtained sufficient positive emission credits.

§ 90.217 Certification Under the Optional Program.

(a) In the application for certification a manufacturer must:

(1) Submit a statement that the engines for which certification is requested will not, to the best of the manufacturer's belief, cause the manufacturer to be in noncompliance under §

90.216(b) when all credits are calculated for the manufacturer's engine families.

(2) Declare an FEL for each engine family for HC+NOx (NMHC+NOx). The FEL must have the same number of significant digits as the emission standard.

(3) Indicate the projected number of credits generated/needed for this family; the projected applicable eligible annual production volume, and the values required to calculate credits as given in § 90.216.

(4) Submit calculations in accordance with § 90.216 of projected emission credits (positive or negative) based on annual production projections for each family.

(5) (I) If the engine family is projected to have negative emission credits, state specifically the source (manufacturer/engine family or reserved) of the credits necessary to offset the credit deficit according to projected annual production.

(ii) If the engine family is projected to generate credits, state specifically (manufacturer/engine family or reserved) where the projected annual credits will be applied.

(iii) The manufacturer may supply the information required by this section in the form of a spreadsheet detailing the manufacturer’s annual production plans and the credits generated or consumed by each engine family.

(b) All certificates issued are conditional upon manufacturer compliance with the provisions of this subpart both during and after the model year of production.

(c) Failure to comply with all provisions of this subpart will be considered to be a failure to satisfy the conditions upon which the certificate was issued, and the certificate may be determined to be void *ab initio* pursuant to § 90.123.

(d) The manufacturer bears the burden of establishing to the satisfaction of the

Administrator that the conditions upon which the certificate was issued were satisfied or waived.

(e) Projected credits based on information supplied in the certification application may be used to obtain a certificate of conformity. However, any such credits may be revoked based on review of end-of-year reports, follow-up audits, and any other verification steps considered appropriate by the Administrator.

§ 90.218 Maintenance of records under the Optional Program.

(a) The manufacturer must establish, maintain, and retain the following adequately organized and indexed records for each engine family:

(1) EPA engine family identification code;

(2) Family Emission Limit (FEL) or FELs where FEL changes have been implemented during the model year;

(3) Maximum modal power for the certification test engine;

(4) Projected production volume for the model year; and

(5) Records appropriate to establish the quantities of engines that constitute eligible production as defined in § 90.3 for each FEL.

(b) Any manufacturer producing an engine family participating in trading reserved credits must maintain the following records on an annual basis for each such engine family:

(1) The engine family;

(2) The actual applicable production volume;

(3) The values required to calculate credits as given in § 90.216;

(4) The resulting type and number of credits generated/required;

(5) How and where credit surpluses are dispersed; and

(6) How and through what means credit deficits are met.

(c) The manufacturer must retain all records required to be maintained under this section for a period of eight years from the due date for the end-of-model year report. Records may be retained as hard copy or reduced to microfilm, ADP diskettes, and so forth, depending on the manufacturer's record retention procedure; provided, that in every case all information contained in the hard copy is retained.

(d) Nothing in this section limits the Administrator's discretion in requiring the manufacturer to retain additional records, or submit information not specifically required by this section, if otherwise permitted by law.

(e) Pursuant to a request made by the Administrator, the manufacturer must submit to the Administrator the information that the manufacturer is required to retain.

(f) EPA may, pursuant to § 90.123, void *ab initio* a certificate of conformity for an engine family for which the manufacturer fails to retain the records required in this section or to provide such information to the Administrator upon request.

§ 90.219 End-of-year and final reports under the optional program.

(a) End-of-year and final reports must indicate the engine family, the engine class, the actual production volume, the values required to calculate credits as given in § 90.216, and the number of credits generated/required. Manufacturers must also submit how and where credit surpluses were dispersed (or are to be banked) and/or how and through what means credit deficits were met. Copies of contracts related to credit trading must be included or supplied by the

broker, if applicable. The report must include a calculation of credit balances to show that the credit summation for all engines is equal to or greater than zero (or less than zero in cases of negative credit balances as permitted in § 90.216(c)). For model years 2008 through 2010, the report must include a calculation of the production weighted average HC+NOx FEL for handheld engine families to show compliance with the provisions of § 90.212(b).

(b) The calculation of eligible production for end-of-year and final reports must be based on engines produced for the United States market, excluding engines which are subject to state emission standards pursuant to a waiver granted by EPA under section 209(e) of the Act. Upon advance written request, the Administrator will consider other methods to track engines for credit calculation purposes that provide high levels of confidence that eligible production or sales are accurately counted.

(c)(1)End-of-year reports must be submitted within 90 days of the end of the model year to: Manager, Engine Compliance Programs Group (6403-J), U.S. Environmental Protection Agency, Washington, DC 20460.

(2) Unless otherwise approved by the Administrator, final reports must be submitted within 270 days of the end of the model year to: Manager, Engine Compliance Programs Group (6403-J), U.S. Environmental Protection Agency, Washington, DC 20460.

(d) Failure by a manufacturer to submit any end-of-year or final reports in the specified time for any engines subject to regulation under this part is a violation of § 90.1003(a)(2) and section 213(d) of the Clean Air Act for each engine.

(e) A manufacturer generating credits for banking only who fails to submit end-of-year reports in the applicable specified time period (90 days after the end of the model year) may not

use the credits until such reports are received and reviewed by EPA. Use of projected credits pending EPA review is not permitted in these circumstances.

(f) Errors discovered by EPA or the manufacturer in the end-of-year report, including errors in credit calculation, may be corrected in the final report.

(g) If EPA or the manufacturer determines that a reporting error occurred on an end-of-year or final report previously submitted to EPA under this section, the manufacturer's credits and credit calculations must be recalculated. Erroneous positive credits will be void except as provided in paragraph (h) of this section. Erroneous negative credit balances may be adjusted by EPA.

(h) If EPA review determines a reporting error in the manufacturer's favor (that is, resulting in an increased credit balance) or if the manufacturer discovers such an error within 270 days of the end of the model year, EPA shall restore the credits for use by the manufacturer.

§ 90.220 Request for hearing.

An engine manufacturer may request a hearing on the Administrator’s voiding of the certificate under §§ 90.203(h), 90.215(e), 90.216(f), 90.217(c), or 90.218(f), pursuant to §90.124. The procedures of §90.125 shall apply to any such hearing.

Subpart D--Emission Test Equipment Provisions

16. Section 90.301 is amended by revising the first and second sentences of paragraph (d) to read as follows:

§ 90.301 Applicability.

* * * * *

(d) For Phase 2 Class I, Phase 2 Class I-B, and Phase 2 Class II natural gas fueled engines, the following sections from 40 CFR Part 86 are applicable to this subpart. The requirements of the following sections from 40 CFR Part 86 which pertain specifically to the measurement and calculation of non-methane hydrocarbon (NMHC) exhaust emissions from otto cycle heavy-duty engines must be followed when determining the NMHC exhaust emissions from Phase 2 Class I, Phase 2 Class I-B, and Phase 2 Class II natural gas fueled engines. * * *

Subpart E--Gaseous Exhaust Test Procedures

17. Section 90.401 is amended by revising the first and second sentences of paragraph (d) to read as follows:

§ 90.401 Applicability.

* * * * *

(d) For Phase 2 Class I, Phase 2 Class I-B, and Phase 2 Class II natural gas fueled engines, the following sections from 40 CFR Part 86 are applicable to this subpart. The requirements of the following sections from 40 CFR Part 86 which pertain specifically to the measurement and calculation of non-methane hydrocarbon (NMHC) exhaust emissions from otto cycle heavy-duty engines must be followed when determining the NMHC exhaust emissions from Phase 2 Class I, Phase 2 Class I-B, and Phase 2 Class II natural gas fueled engines. * * *

17. Section 90.404 is amended by revising paragraph (b) to read as follows:

§ 90.404 Test procedure overview.

* * * * *

(b) The test is designed to determine the brake-specific emissions of hydrocarbons, carbon monoxide, carbon dioxide, and oxides of nitrogen and fuel consumption. For Phase 2 Class I-B, Class I, and Class II natural gas fueled engines the test is also designed to determine the brake-specific emissions of non-methane hydrocarbons. The test consists of three different

test cycles which are application specific for engines which span the typical operating range of nonroad spark-ignition engines. Two cycles exist for Class I-B, I and II engines and one is for Class I-A, III, IV, and V engines (see § 90.103(a) and § 90.116(b) for the definitions of Class I-A, I-B, and I - V engines). The test cycles for Class I-B, I, and II engines consist of one idle mode and five power modes at one speed (rated or intermediate). The test cycle for Class I-A, III, IV, and V engines consists of one idle mode at idle speed and one power mode at rated speed. These procedures require the determination of the concentration of each pollutant, fuel flow, and the power output during each mode. The measured values are weighted and used to calculate the grams of each pollutant emitted per brake kilowatt hour (g/kW-hr).

* * * * *

19. Section 90.408 is amended by revising the table in paragraph (b)(2) to read as follows:

§ 90.408 Pre-test procedures.

* * * * *

(b) * * *

(2) * * *

Engine class	Test cycle	Operating mode
I, I-B, II	A	6
I, I-B, II	B	1

I-A, III, IV, V	C	1

* * * * *

20. Section 90.409 is amended by revising the last sentence of paragraph (a)(3) and by revising paragraph (b)(6) to read as follows:

§ 90.409 Engine dynamometer test run.

(a) * * *

(3) * * * For Phase 2 Class I, Phase 2 Class I-B, and Phase 2 Class II engines equipped with an engine speed governor, the governor must be used to control engine speed during all test cycle modes except for Mode 1 or Mode 6, and no external throttle control may be used that interferes with the function of the engine's governor; a controller may be used to adjust the governor setting for the desired engine speed in Modes 2-5 or Modes 7-10; and during Mode 1 or Mode 6 fixed throttle operation may be used to determine the 100 percent torque value.

(b) * * *

(6) For Class I, I-B, and II engines, during the maximum torque mode calculate the torque corresponding to 75, 50, 25, and 10 percent of the maximum observed torque (see Table 2 in Appendix A to this subpart).

* * * * *

21. Section 90.410 is amended by revising paragraph (a), the first and third sentences of paragraph (b), and the first sentence of paragraph (c) to read as follows:

§ 90.410 Engine test cycle.

(a) Follow the appropriate 6-mode test cycle for Class I, I-B and II engines and 2-mode test cycle for Class I-A, III, IV, and V engines when testing spark-ignition engines (see Table 2 in Appendix A of this subpart).

(b) For Phase 1 engines and Phase 2 Class I-A, III, IV, and V, and Phase 2 Class I and II engines not equipped with an engine speed governor, during each non-idle mode, hold both the specified speed and load within ± five percent of point. * * * For Phase 2 Class I, I-B, and II engines equipped with an engine speed governor, during Mode 1 or Mode 6 hold both the specified speed and load within ± five percent of point, during Modes 2-3, or Modes 7-8 hold the specified load with ± five percent of point, during Modes 4-5 or Modes 9-10, hold the specified load within the larger range provided by +/-0.27 Nm (+/-0.2 lb-ft), or +/- ten (10) percent of point, and during the idle mode hold the specified speed within ± ten percent of the manufacturer's specified idle engine speed (see Table 1 in Appendix A of this subpart for a description of test Modes). * * *

(c) If the operating conditions specified in paragraph (b) of this section for Class I, I-B, and II engines using Mode Points 2, 3, 4, and 5 cannot be maintained, the Administrator may authorize deviations from the specified load conditions. * * *

* * * * *

22. Appendix A to Subpart E of Part 90 is amended in Table 2 by revising the table heading, removing the last entry and adding two new entries in its place to read as follows:

Appendix A to Subpart E of Part 90 --Tables

* * * * *

Table 2. - Test Cycles for Class I-A, I-B, and Class I-V Engines

Mode	1	2	3	4	5	6	7	8	9	10	11
Speed	Rated Speed					Intermediate Speed					Idle
*	*	*	*	*	*	*					
Weighting for Phase 1 Engines	90%										10%
Weighting for Phase 2 Engines	85%										15%

Subpart H - Manufacturer Production Line Testing Program

23. Section 90.701 is amended by adding the words “handheld and” immediately preceding the word “nonhandheld” in paragraph (a).

Subpart K--Prohibited Acts and General Enforcement Provisions

24. Section 90.1003 is amended by adding paragraph (b)(5)(v), by revising the first sentence of paragraph (b)(6)(I) and adding a new sentence to the end of paragraph (b)(6)(I), by revising the first two sentences of paragraph (b)(6)(ii) and adding a new sentence to the end of paragraph (b)(6)(ii), by revising paragraph (b)(6)(iii) introductory text, and by adding a new paragraph (b)(7) to read as follows:

§ 90.1003 Prohibited acts.

* * * * *

(b) * * *

(5) * * *

(v) In cases where an engine is to be imported for replacement purposes under the provisions of this paragraph (b)(5), the term “engine manufacturer” shall not apply to an individual or other entity that does not possess a current Certificate of Conformity issued by EPA under this part.

(6)(I) Regulations elsewhere in this part notwithstanding, for three model years after the phase-in of each set of Class I through Class V Phase 2 standards; i.e. up to and including August 1, 2010 for Class I engines, up to and including model year 2008 for Class II engines, up to and including model year 2008 for Class III and Class IV engines, and up to and including model year 2010 for Class V engines, small volume equipment manufacturers as defined in this part, may continue to use, and engine manufacturers may continue to supply, engines certified to Phase 1

standards (or identified and labeled by their manufacturer to be identical to engines previously certified under Phase 1 standards), provided the equipment manufacturer has demonstrated to the satisfaction of the Administrator that no certified Phase 2 engine is available with suitable physical or performance characteristics to power a piece of equipment in production prior to the initial effective date of Phase 2 standards, as indicated in § 90.103(a). * * * These provisions do not apply to Class I-A and Class I-B engines.

(ii) Regulations elsewhere in this part notwithstanding, for the duration of the Phase 2 rule in this part, equipment manufacturers that produce small volume equipment models, as defined in this part, for a Class I model in production prior to August 1, 2007, or a Class II model in production prior to the 2001 model year, or a Class III or Class IV model in production prior to the 2002 model year, or a Class V model in production prior to the 2004 model year, may continue to use in that small volume equipment model, and engine manufacturers may continue to supply, engines certified to Phase 1 requirements (or identified and labeled by their manufacturer to be identical to engines previously certified under Phase 1 standards). To be eligible for this provision, the equipment manufacturer must have demonstrated to the satisfaction of the Administrator that no certified Phase 2 engine is available with suitable physical or performance characteristics to power the small volume equipment model. * * * These provisions do not apply to Class I-A and Class I-B engines.

(iii) An equipment manufacturer which is unable to obtain suitable Phase 2 engines and which can not obtain relief under any other provision of this part, may, prior to the date on which the manufacturer would become in noncompliance with the requirement to use Phase 2 engines, apply to the Administrator to be allowed to continue using Phase 1 engines, through August 1,

2008 for Class I engines, through the 2006 model year for Class II engines, through the 2006 model year for Class III and Class IV engines, and through the 2008 model year for Class V engines, subject to the following criteria (These provisions do not apply to Class I-A and Class I-B engines.):

* * * * *

(7) Actions for the purpose of installing or removing altitude kits and performing other changes to compensate for altitude change as described in the application for certification pursuant to § 90.107(d) and approved at the time of certification pursuant to § 90.108(a) are not considered prohibited acts under paragraph (a) of this section.

Subpart L-- Emission Warranty and Maintenance Instructions

25. Section 90.1103 is amended by adding three sentences to the end of paragraph (a) to read as follows:

§ 90.1103 Emission warranty, warranty period.

(a) * * * Manufacturers of handheld engines subject to Phase 2 standards may apply to the Administrator for approval for a warranty period of less than two years for handheld engines that are subject to severe service in seasonal equipment and are likely to run their full useful life hours in less than two years. Such an application must be made prior to certification. Alternatively, manufacturers of handheld engines subject to Phase 2 standards may apply to the Administrator for approval for a warranty period equal to the useful life of the engine or two years, whichever is less, if the equipment in which the engine is placed is equipped with a meter for measuring hours of use. Such an application must be made prior to certification.

* * * * *

Subpart M - Voluntary In-Use Testing

26. Section 90.1201 is amended by adding the words “handheld and” immediately preceding the word “nonhandheld”.

PART 91–CONTROL OF EMISSIONS FROM MARINE SPARK-IGNITION ENGINES

27. The authority citation for part 91 is revised to read as follows:

Authority: 42 U.S.C. 7521, 7522, 7523, 7524, 7525, 7541, 7542, 7543, 7547, 7549, 7550, and 7601(a).

Subpart C - Averaging, Banking, and Trading Provisions

28. Section 91.207 is amended by adding paragraph (e) to read as follows:

§ 91.207 Credit calculation and manufacturer compliance with emission standards.

* * * * *

(e) Notwithstanding other provisions of this part, for model years beginning with model year 2000, a manufacturer having a negative credit balance during one period of up to four consecutive model years will not be considered to be in noncompliance in a model year up through and including model year 2009 where:

(1) The manufacturer has a total annual production of engines subject to regulation under this part of 1000 or less; and

(2) The manufacturer has not had a negative credit balance other than in three immediately preceding model years, except as permitted under paragraph (c) of this section; and

(3) The FEL(s) of the family or families produced by the manufacturer are no higher than those of the corresponding family or families in the previous model year, except as allowed by the Administrator; and

(4) The manufacturer submits a plan acceptable to the Administrator for coming into compliance with future model year standards including projected dates for the introduction or increased sales of engine families having FEL(s) below standard and projected dates for discontinuing or reducing sales of engines having FEL(s) above standard; and

(5)(I) The manufacturer has set its FEL using emission testing as prescribed in subpart E

of this part; or

(ii) The manufacturer has set its FEL based on the equation and provisions of §91.118(h)(1)(I) and the manufacturer has submitted appropriate test data and revised its FEL(s) and recalculated its credits pursuant to the provisions of §91.118(h)(1); or

(iii) The manufacturer has set its FEL using good engineering judgement, pursuant to the provisions of §91.118(h)(1)(ii) and §91.118(h)(2).

Subpart L - Prohibited Acts and General Enforcement Provisions

29. Section 91.1103 is amended by adding paragraph (b)(4)(v) to read as follows:

§ 91.1103 Prohibited acts.

* * * * * *

(b) * * *

(4) * * *

(v) In cases where an engine is to be imported for replacement purposes under the provisions of this paragraph (b)(4), the term “engine manufacturer” shall not apply to an individual or other entity that does not possess a current Certificate of Conformity issued by EPA under this part.